

Literature Review: Identifying the effect of immigrants on American labor market outcomes

Ruxin Chen

The effect of immigrants on the employment opportunities for native workers has received a great deal of research attention during the last decades. In recent years, as the intensifying of the regional terrorist threats in the Middle East, whether to accept refugees has been at the heart of a growing political debate for many western countries. Moreover, with the slowing pace of economic growth in the developed world, policy makers seem to be concerned about the adverse effect, if any, on employment that immigrants might bring to the native labor market. My project intends to investigate this question using a computational method to add value to the literature. Specifically, it will deploy a regression tree method to identify the heterogeneous effect of immigration on native labor market outcomes on different subgroups of the population. This study is expected to provide some policy implications under the current political landscape of exclusionism/protectionism.

The classical model suggests that an inflow of immigrants would always lower the wage of competing factors. Though the model is well understood, the economic mechanism of the interplay of immigrants and native workers might go beyond the over-simplified demand-supply model. According to Friedberg and Hunt [1995], the theoretical prediction of this problem will depend on the whether the economy of the host country is closed or open and also

the composition of the native workers and immigrants in terms of their skills set: “In a closed economy, immigrants will lower the price of factors with which they are perfect substitutes, have an ambiguous effect on the price of factors with which they are imperfect substitutes and raise the price of factors with which they are complements.” Hence, skilled immigrants will lower the skilled wage, increase the employment in the skilled occupations, and the result is deducted likewise for the unskilled immigrants. However, in an open economy, the Heckscher-Ohlin model indicates that countries specialize in the production of goods according to their initial endowments of factors. Labors will migrate from abroad as long as the domestic wage is above the world level. Therefore, with certain restrictions on immigration, the wage level will rely on the size: if the number of immigrants allowed is much larger than the equilibrium at which the immigration fully eliminates the wage differentials, the country will move to more labor-intensive goods which lowers the wage; if there are few immigrants, the wage level remains the same as the immigration effect can be digested through exporting the excessive goods. While the case is different when we try to explain by the efficiency wage model of Shapiro and Stiglitz [1984]. It is hard to determine the optimal theory that should be applied in this case by logical reasoning, hence, a careful empirical study is valuable to improve the theoretical framework.

However, the previous empirical results did not come to a consensus regarding this question. The vast majority of the existing studies conclude that the impact of immigration on the labor market outcomes is small. LaLonde and Topel [1991] examined that despite the fact that the immigrants brought fewer marketable skills and were less-educated, they assimilated rapidly in the US market during the 1970s and 1980s and had a negligible impact on the wages and employment prospect on the native workers. Council et al. [1997] found similar results in the 1997 National Academy of Sciences report. However, Card [1990] argued that the presence of spatial correlation would cause bias in estimation. According to Borjas [2003], papers that use the differences between labor markets with/without clustering of immigrants to identify the impact of immigration ignore the fact the mobility of native labors will attenuate the effect.

Moreover, the endogeneity problem might arise because immigrants tend to concentrate in big cities where the wage level is higher per se. He then proposed that, instead of using geographical variation, an effect can be estimated by dividing the population of interest by different skills group based on education attainment and experience, and for each skills group, compare the differences between those with and without an immigrant supply shock. He obtained an adverse effect of immigrants on the native workers: a 10 percent increases in supply reduces wage of native workers by 3 to 4 percent. Similarly, Angrist and Kugler [2003] also examined a negative effect of immigration on the native workforce, but to a different magnitude, where a 10 percent increase in supply would reduce native employment rate by 0.2-0.7 of a percent point.

Based on the argument of “spatial correlation”, Dustmann et al. [2005] propose an identification strategy by applying pre-existing immigration concentration as an instrument for the current immigration shock. They used the data from British, where unlike the US and some continental European countries where the immigrants are often less-skilled, the composition of the British immigrants is quite similar to the composition of the native workforce. Interestingly, they found no overall adverse effects of immigration on native outcomes. The negative effect for the group with intermediate education levels is offset by the positive effects on employment for the better-qualified groups. A more recent paper by Fogel and Peri [2016] considers the refugee dispersal policy as a quasi-experiment to obtain identification. Different from all previous study, the author reported a positive effect on the less-educated native workforce in terms of wage, employment, and occupational mobility.

Both the theories and empirical results imply that the effect of immigration on native worker might be heterogeneous across different groups. Understanding the heterogeneity might help us to figure out the reason for the inconsistency of the findings in the literature. Existing papers only focused on one particular type of heterogeneity: high-skilled and low skilled [Borjas, 2005, Athey and Imbens, 2016]. However, the definition of skilled and unskilled

seem to be ambiguous. Borjas [2003] considers both the education attainment and work experience to sort workers into particular skilled groups. However, as acknowledged by the author, “the classification of workers into experience groups is bound to be imprecise because the Census does not provide any measure of labor market experience or of the age at which a worker first enters the labor market”. The measure he applied to approximate the experience, “age - education - 6”, is biased for female workers and cannot differentiate between experience obtained in the source country and the United State. More importantly, it is dubious that we can consider workforce with similar skills level as substitutes in the labor market. An apparent example is that employers will be likely to treat differently for young employees and old employees (though age is correlated with experience, age definitely deliver information other than experience to employers). Other factors like age might also be essential to heterogeneity problem but are failed to captured in theories. Therefore, a machine learning technique is applied to identify the potential subgroups of the population. This is the major innovation of my study. The research is deductive, and the finding is expected to provide some insights to address the confusion in theories.

The machine learning method I am going to use is based on the method proposed by Athey and Imbens [2016], which uses a regression tree to find the partition of the population according to covariates. Most machine learning technique cannot be used directly for constructing confidence interval since the models are “adaptive” and the conventional asymptotic properties cannot be achieved. They propose a two-steps procedure to overcome this problem, called “honest” approach, which splits the training sample into two parts for constructing the tree and estimating treatment effect within each leave of the tree. The independence of the two steps guarantees the validity of the estimation.

Bibliography

- Joshua D Angrist and Adriana D Kugler. Protective or counter-productive? labour market institutions and the effect of immigration on eu natives. *The Economic Journal*, 113(488), 2003.
- Susan Athey and Guido Imbens. Recursive partitioning for heterogeneous causal effects. *Proceedings of the National Academy of Sciences*, 113(27):7353–7360, 2016.
- George J Borjas. The labor demand curve is downward sloping: Reexamining the impact of immigration on the labor market. *The quarterly journal of economics*, 118(4):1335–1374, 2003.
- George J Borjas. The labor-market impact of high-skill immigration. *American Economic Review*, 95(2):56–60, 2005.
- David Card. The impact of the mariel boatlift on the miami labor market. *ILR Review*, 43(2):245–257, 1990.
- National Research Council, Committee on Population, et al. *The new Americans: Economic, demographic, and fiscal effects of immigration*. National Academies Press, 1997.
- Christian Dustmann, Francesca Fabbri, and Ian Preston. The impact of immigration on the british labour market. *The Economic Journal*, 115(507), 2005.
- Mette Foged and Giovanni Peri. Immigrants’ effect on native workers: New analysis on longitudinal data. *American Economic Journal: Applied Economics*, 8(2):1–34, 2016.
- Rachel M Friedberg and Jennifer Hunt. The impact of immigrants on host country wages, employment and growth. *Journal of Economic perspectives*, 9(2):23–44, 1995.
- Robert J LaLonde and Robert H Topel. Immigrants in the american labor market: Quality,

assimilation, and distributional effects. *The American economic review*, 81(2):297–302, 1991.

Carl Shapiro and Joseph E Stiglitz. Equilibrium unemployment as a worker discipline device. *The American Economic Review*, 74(3):433–444, 1984.